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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,564	09/26/2003	Edward Ashton	116741-00215	8133
27557	7590	06/26/2006	EXAMINER	
BLANK ROME LLP 600 NEW HAMPSHIRE AVENUE, N.W. WASHINGTON, DC 20037			PATEL, SHEFALI D	
			ART UNIT	PAPER NUMBER
			2624	

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/670,564

Applicant(s)

ASHTON, EDWARD

Examiner

Shefali D. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/26/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The informal drawings filed in this application on September 26, 2003 are acceptable for examination purposes. The elements labeled are hand-written. When the application is allowed, applicant will be required to submit new formal drawings.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 6-7, 10-14, 18, 23-24 and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Young et al (hereinafter, "Young") (US 6,625,303).

With regard to **claim 1** Young discloses (a) receiving image data representing the image (col. 6 lines 52-66, col. 7 lines 10-20); (b) statistically identifying types of structures in the image by applying a maximum likelihood classifier to the image data (col. 7 lines 5-9, col. 8 lines 15-21); (c) forming a statistical description of a structure of interest in the image in accordance with the types of structures identified in step (b) and an exemplar input (col. 8 lines 2-8, col. 10 lines 1-14, col. 12 lines 28-34); (d) forming a morphological description of the structure of interest in accordance with the statistical description formed in step (c) and the exemplar input (col. 12 lines 43-48); and (e) forming a structural identification of the structure of interest in accordance with the morphological description formed in step (d) and the exemplar input (col. 12 lines 48-57).

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With regard to **claims 6-7** Young discloses the exemplar input derived from an input manually made by a user, comprising a mouse click (col. 7 lines 36-40).

With regard to **claim 10** Young discloses (f) receiving a verification of an accuracy of structural identification formed in step (e) by displaying the image at 314 in Figure 9 or output it at printer, for example, at 318 as seen in Figure 9.

With regard to **claim 11** Young discloses repeating the step (c), (d), (e) and (f) at col. 11 lines 33-36.

With regard to **claim 12** Young discloses data of a plurality of image at 132 and 130 in Figure 1(b).

With regard to **claim 13** Young discloses step (e) is being performed on an image-by-image basis for the plurality of images (col. 11 lines 33-36).

With regard to **claim 14** Young discloses forming the structural identification for one of the image (col. 8 lines 2-8, col. 10 lines 1-14, col. 12 lines 28-34); and using the structural identification formed for said one of the image to seed the structural identification in remaining ones of the image (the information from one of the image is stored (or sent) to the classified and used for future images, col. 12 lines 48-57).

**Claim 18** recites identical features as claim 1 except claim 18 is a system claim. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 18. Please note, Young discloses a system processing the method of claim 1 as seen in Figures 9-10.

**Claims 23-24** recites identical features as claims 6-7. Thus, arguments similar to that presented above for claims 6-7 is equally applicable to claims 23-24.

**Claim 27** recites identical features as claim 10. Thus, arguments similar to that presented above for claim 10 is equally applicable to claim 27.

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**Claim 28** recites identical features as claim 11. Thus, arguments similar to that presented above for claim 11 is equally applicable to claim 28.

**Claim 29** recites identical features as claims 12 and 13. Thus, arguments similar to that presented above for claims 12 and 13 is equally applicable to claim 29.

**Claim 30** recites identical features as claim 14. Thus, arguments similar to that presented above for claim 14 is equally applicable to claim 30.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4, 8-9, 19-21 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young in view of Bradshaw (US 2002/0122596).

With regard to **claim 2** Young discloses the method as disclosed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Young does not expressly disclose the maximum likelihood classifier comprising a discriminant function. Bradshaw discloses this on page 5 paragraphs 76-80. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Bradshaw with Young. The motivation for doing so is to separate classes, which are non-linearly separable, and hence allows a much wider range of problems to be solved. Therefore, it would have been obvious to combine Bradshaw with Young to obtain the invention as specified in claim 2.

With regard to **claim 3** Bradshaw discloses selecting the discriminant function in accordance with an availability of a priori probabilities (page 5 paragraph 82).

With regard to **claim 4** Bradshaw discloses selecting the discriminant function in accordance with

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an expectation of whether the types of structures to be statistically identified will have different covariance matrices (page 5 paragraphs 83 and 84).

With regard to **claims 8 and 9** Bradshaw discloses using region identification using the maximum likelihood classified (page 4 paragraph 62-63 and 72-74).

**Claim 19** recites identical features as claim 2. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 19.

**Claim 20** recites identical features as claim 3. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 20.

**Claim 21** recites identical features as claim 4. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 21.

**Claims 25 and 26** recites identical features as claims 8 and 9. Thus, arguments similar to that presented above for claims 8 and 9 is equally applicable to claims 25 and 26.

6. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young in view of Miller (US 2001/0036302 A1).

With regard to **claim 5** Young discloses the method as disclosed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Young does not expressly disclose the exemplar input derived from a co-registered anatomical atlas. Miller discloses this on page 2 paragraph 26. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Miller with Young. The motivation for doing so is to have information in many forms representative of anatomical regions of interest for a particular application as suggested by Miller. Therefore, it would have been obvious to combine Miller with Young to obtain the invention as specified in claim 5.

**Claim 22** recites identical features as claim 5. Thus, arguments similar to that presented above

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for claim 5 is equally applicable to claim 22.

7. Claims 15-17 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young in view of Williame et al (hereinafter, "Williame") (US 7,027,650).

With regard to **claim 15** Young discloses the method as disclosed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Young does not expressly disclose step (e) further comprising determining whether each of the remaining ones of the images comprises a bifurcation point of the structure of interest. Williame discloses this at col. 11 lines 37-39, lines 50-59 and col. 12 lines 16-55. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Williame with Young. The motivation for doing so is to obtain the direction and speed by analyzing the vector as suggested by Williame at col. 12 lines 35-50. Therefore, it would have been obvious to combine Williame with Young to obtain the invention as specified in claim 15.

With regard to **claim 16** Young discloses the image a medical image and wherein the structure comprises tissues (col. 8 lines 22-25 and lines 29-36).

With regard to **claim 17** Young discloses the image an MRI image at col. 7 lines 14-21.

**Claim 31** recites identical features as claim 15. Thus, arguments similar to that presented above for claim 15 is equally applicable to claim 31.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D. Patel whose telephone number is 571-272-7396. The examiner can normally be reached on M-F 8:00am - 5:00pm (First Friday Off).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shefali D Patel  
Examiner  
Art Unit 2624

June 6, 2006

JINGGE WU  
PRIMARY EXAMINER

